REVISED 11/09

LSUE COURSE SYLLABUS

I.	PHYS 2101	Instructor: Michael Scanlan

II.	Course description from the current LSUE catalog:

General Physics for Technical Students.   Lec. 3; Cr. 3.
Principles and applications of mechanics, heat, sound, and light for students majoring in mathematics, chemistry, or engineering.
Prerequisite: Credit or registration in Mathematics 1552.

III.	Textbook(s) and other required materials:

<u>Physics for Scientists and Engineers</u>, 7th ed. Serway and Jewett, Thomson.

IV.	Evaluation/grading (policy and basis; number and frequency of tests and papers; weights of particular tests or papers; etc.):

During a semester, three one hour exams (each worth 100 points) and a 2 hour final exam (worth 200 points) will be given. Homework will be completed online via WebAssign. Usual 10 point scale is applied.

Homework will not be accepted late. Make-up exams will not be scheduled. If an exam is anticipated to be missed with an excused absence, the student may take the exam BEFORE it is given to the class, otherwise, the final exam grade will be substituted for the missed exam.

V.	Policies pertaining to attendance, late work, make-up work, etc.:

Attendance for each class period is required in order for the students to understand the materials assigned to them. For an anticipated absence on a regular test time, due to an unavoidable difficulty, consult with your instructor.

VI.	Course objectives:

   A. Develop an understanding of the inner workings of the physical systems.
   B. Study physics laws and observe how they are connected to the physical systems mentioned in A.
   C. Use "logical deduction" in identifying cause and effects.
   D. Use mathematics as a physical modeling technique. Problem solving is emphasized.
   E. Relate A, B, C, D to the real life problems. (applications)

VII.	Major instructional objectives:

Because Physics 2101 is the backbone of all engineering and physical science disciplines, an intentional attention will be given to the techniques of problem solving pertinent to the different subject matters in engineering and sciences. The aim is to expedite a smooth transition to the forthcoming technical courses.

VIII.	Brief summary of course content by major units of instruction:

A. Introduction
    1. Science and Technology
    2. Measurement
    3. Basic Units
    4. Derived Quantities and Dimensional Analysis
B. Vectors
    1. Vector and Scalar Quantities
    2. Forces and Vectors
    3. Units and Basic Vectors
C. Bodies at Rest
    1. First and Second Conditions of Equilibrium
    2. Center of Gravity
D. Uniformly Accelerated Motion
    1. Speed and Velocity
    2. Acceleration
    3. Averages by Integration
    4. Motion Equations
    5. Freely Falling Bodies
    6. Projectile Motion
E. Newton's Laws of Motion
    1. Inertia and The First Law
    2. Newton's 3rd Law
    3. Newton's 2nd Law with Applications
    4. Friction Forces
F. Work and Energy
    1. Definition of Work and Power
    2. Potential and Kinetic Energy
    3. Conservation of Energy
    4. Elastic Energy
G. Momentum
    1. Impulse and Momentum
    2. Momentum Conservation
    3. Applications
    4. Energy Diagrams
H. Relativistic Effects
    1. Two Basic Postulates
    2. Reference Frames

          3. Gallean Relativity
          4. The Relativistic Factor
          5. Momemtum and Relativistic Mass
          6. Relativistic Energy

I. Rotational Motion
    1. Angular Measurements
    2. Centripetal Force
    3. Centrifugal Force
    4. Law Of Gravitation
    5. Torque and Rotation
    6. Moment of Inertia
    7. Rotational Energy
    8. Angular Momentum
    9. Applications

J. Oscillatory Motion
    1. Hooke's Law
    2. Simple Harmonic Motion
    3. The Pendulum
    4. The Torsion Pendulum

-- (Optional)

K. Continuum Mechanics
    1. Modulus of Elasticity
    2. Viscosity
    3. Pressure in Fluids
    4. Archimedes Principle
    5. Bernoulli's Equation

L. Ideal Gases
    1. Pressure of A Dilute Gas
    2. Definition of Temperature
    3. Physical Basic of Temperature
    4. Distribution of Molecular Speeds

M. Thermal Properties of Matter
    1. Concept of Heat
    2. Specific Heat
    3. Work Done by a Gas
    4. Latent Heat
    5. Thermal Expansion
    6. Heat Conduction
    7. Laws of Thermodynamics
    8. Isothermal and Adiabatic Changes
    9. The Carnot Cycle
    10. Applications

IX.	Methods of instruction:

Scheduled lectures accompanied with the use of demonstrations will constitute the core of the instructional method.

ADS	Americans with Disabilities Act) Statement

Any student who is a "qualified individual with a disability" as defined by Section 504 of the Rehabilitation Act and Title II of the ADA, and who will need accommodated services (e.g., note takers, extended test time, audiotape, tutorials, etc.) for this course must register and request services through the Office of Academic Assistance Programs, S-150.

CSD	CODE OF STUDENT CONDUCT

LSUE enforces discipline on campus to protect the academic environment of the campus and the health and safety of all members of the University community. To accomplish this objective, the University enforces standards of conduct for its students. Students who violate these standards can be denied membership in the LSUE community through imposition of disciplinary sanctions.

The LSUE Code of Student Conduct can be found on the LSUE website (lsue.edu). Follow the "Current Students" link from the homepage, and then click on "Student Handbook."